

### **REMARKS**

Favorable reconsideration is respectfully requested in view of the above amendments and following remarks. Claims 6 and 9 have been amended. The amendment to claims 6 and 9 is supported by the original disclosure. For example, page 4, lines 9-12 of the specification indicates that ulvans are essentially composed of units derived from components including iduronic acid, and Example 1 on page 7, line 25 to page 8, line 7 of the specification demonstrates that ulvans and the hydrolyzed product of ulvans contain iduronic acid. Claims 23-26 are new, and are supported by the original disclosure, for example at page 4, line 9 to page 5, line 10 of the specification. No new matter has been added. Claims 6-26 are pending.

#### ***Claim Rejections – 35 USC §103***

Claims 6-22 are rejected under 35 USC 103(a) as obvious over Iqbal et al. (Pak. J. Bot. (1999), 31(1): 193-198. *Studies on aqueous extracts of three green algae as an elicitor of plant defence mechanism.*). Applicants respectfully traverse the rejection.

Claim 6 recites administering, to the plants or soils in which the plants are located, an effective amount of (1) ulvans, or (2) a reaction product obtained from the treatment of the ulvans of (1) by chemical hydrolysis or enzymatic hydrolysis, for eliciting nitrogen absorption and protein synthesis in the plants or soils in which the plants are located. Claim 6 further recites that the ulvans of (1) and the reaction product of (2) comprise iduronic acid. Advantageously, when the method as recited in claim 6 is carried out, an increase in the total amount of proteins, for example root proteins, as compared to control plants as well as stimulation of the genes involved in nitrogen transport in the treated plants can be achieved (see Examples 3 and 4 on pages 14-16 of the specification).

Iqbal discloses that their polysaccharide extracts of *Ulva lactulus* contain glucose, rhamnose, arabinose, xylose, fucose, galactose and mannose (see page 196 of Iqbal). The reference further indicates that glucuronic and galactouronic acids were found in negligible amounts in the hot acid extracts of *Ulva lactulus* (*Id.*). However, Iqbal does not disclose or suggest that their polysaccharide extracts contain ulvans, let alone ulvans that contain iduronic acid, as recited in claim 6. Accordingly, Applicants submit that the polysaccharide extracts described by Iqbal do not correspond to the ulvans of claim 6.

The rejection contends that Iqbal teaches high elicitor activity and sugar content of the *Ulva Lactulus*, that one would be motivated to use the polysaccharide extracts in an amount which would result in this function, and since the reference teaches elicitor activity leading to disease resistance, the amount administered to exhibit such a showing must have been the effective elicitor amount as claimed. Firstly, as is clear from the discussion above, the polysaccharide extracts described by Iqbal do not correspond to the ulvans of claim 6. Moreover, even accepting arguendo that Iqbal's polysaccharide extracts correspond to the ulvans of claim 6 and that Iqbal teaches an amount effective for high elicitor activity, an amount effective for eliciting plant defense against diseases, as taught by Iqbal, does not necessarily correspond to an amount effective for eliciting nitrogen absorption, as recited in claim 6. That is, the elicitor activity as taught by Iqbal refers to the induced resistance to diseases in the plants, as opposed to eliciting absorption of nitrogen, nitrogen being a nutritive element essential to plant growth. Iqbal does not provide any guidance or experimental data showing the effects of their polysaccharide extracts on the expression of genes, pathways, etc. related to nitrogen absorption. Thus, Iqbal does not provide any reason to expect that an amount effective for eliciting plant defense against diseases, would be necessarily effective for eliciting nitrogen absorption, as recited in claim 6. Accordingly, claim 6 and its dependent claims are patentable over Iqbal.

Claim 9 recites that the fertilizer product includes an effective amount of at least one of (1) ulvans and (2) a reaction product obtained from the treatment of said ulvan of (1) by chemical hydrolysis or enzymatic hydrolysis, for eliciting nitrogen absorption and protein synthesis in the plants or soils in which the plants are located, in combination with one or more fertilizing substances. Claim 9 further recites that the ulvans of (1) and the reaction product of (2) comprise iduronic acid. Advantageously, when the fertilizer product as recited in claim 9 is applied to plants, an increase in the total amount of proteins, for example root proteins, as compared to control plants as well as stimulation of the genes involved in nitrogen transport in the treated plants can be achieved (see Examples 3 and 4 on pages 14-16 of the specification).

As is clear from the discussion above, Iqbal does not disclose or suggest that their polysaccharide extracts contain ulvans, let alone ulvans that contain iduronic acid, as recited

in claim 9. Accordingly, Applicants submit that the polysaccharide extracts described by Iqbal do not correspond to the ulvans of claim 9.

The rejection contends that the product function cannot be given patentable weight when the composition itself is claimed. However, claim 9 does not merely recite an intended function of the fertilizer product, but recites that the fertilizer product contains a prescribed amount of the ulvans. Therefore, the amount of the ulvans as recited in claim 9 should be given patentable weight. As is clear from the above discussion, an amount effective for eliciting plant defense against diseases, as taught by Iqbal, does not necessarily correspond to an amount effective for eliciting nitrogen absorption, as recited in claim 9. That is, the elicitor activity as taught by Iqbal refers to the induced resistance to diseases in the plants, as opposed to eliciting absorption of nitrogen, nitrogen being a nutritive element essential to plant growth. Iqbal does not provide any guidance or experimental data showing the effects of their polysaccharide extracts on the expression of genes, pathways, etc. related to nitrogen absorption. Thus, Iqbal does not provide any reason to expect that an amount effective for eliciting plant defense against diseases, would be necessarily effective for eliciting nitrogen absorption, as recited in claim 9. Accordingly, claim 9 and its dependent claims are patentable over Iqbal.

In view of the above, favorable reconsideration in the form of a notice of allowance is requested. Any questions or concerns regarding this communication can be directed to the attorney-of-record, Douglas P. Mueller, Reg. No. 30,300, at (612) 455.3804.



Dated: *Sept. 13, 2010*

Respectfully submitted,

HAMRE, SCHUMANN, MUELLER &  
LARSON, P.C.  
P.O. Box 2902  
Minneapolis, MN 55402-0902  
(612) 455-3800

By: 

Douglas P. Mueller  
Reg. No. 30,300